VIVIDIFFUSION EXPERIMENTS ON THE AMMONIA OF THE CIRCULATING BLOOD

By Alice Rohde

DEPARTMENT OF PHARMACOLOGY, JOHNS HOPKINS MEDICAL SCHOOL

Presented to the Academy, May 5, 1915

The fact that the ammonia content of shed blood under aseptic conditions increases is well known and is taken into account as much as possible by a rapid procedure in methods for the determination of preformed ammonia. Suggestions as to the source of this slowly liberated ammonia have as yet led to no positive findings. My experiments were undertaken to determine whether with aseptic measures the formation of ammonia occurs in diffusible constituents of the blood after their separation from the non-diffusible constituents according to the vividiffusion method of John J. Abel[1] and his collaborators. The dialysate, obtained when the vividiffusion apparatus was attached to the femoral artery and femoral vein of a dog for periods varying from three to seven hours, was studied for the production of ammonia in excess of that present at the time of dialysis. The results were compared with those from shed blood under similar conditions. It was found that in a dialysate obtained from circulating blood there is no liberation of ammonia comparable to that which takes place under aseptic conditions in shed blood.

Blood	*Milligrams of* NH_3-N *per 100 cc.*
Sample taken at close of dialysis	0.30
Sample taken at close of dialysis and allowed to stand 36 hours	0.63
Dialysate	
Sample after $5\frac{1}{2}$ hours dialysis	0.27
Sample after 7 hours dialysis	0.29
Sample removed after 7 hours dialysis and allowed to stand 36 hours	0.28

The ammonia content of the blood is doubled in twenty-four hours while that of the dialysate shows no increase. An equilibrium between the ammonia content of the dialysate and of a sample of the circulating blood was reached.

The slowly evolved ammonia has its source therefore in non-diffusible constituents of the blood.

Details of the methods with additional tables appear in the June (1915) number of the *Journal of Biological Chemistry*.

[1] On the removal of diffusible substances from the circulating blood of living animals. *J. Pharmacol. Exp. Therap.*, 5, 275 and 611 (1914).